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What is 4-State Customer Barcode?

4-State Customer Barcode (4CB) is the next generation in the evolution of USPS barcode technology. It does not replace existing barcodes – it offers a more effective alternative. Partnering with the Mailing Industry, the Postal Service developed the 4CB which increases the amount of information carried on letter and flats mailpieces and allows for expanded tracking capability, creating greater visibility into the mailstream.

4CB is a height-modulated barcode using four distinct, vertical bar types. It encodes a 31-digit string into 65 vertical bars each representing one of four possible states: full bar, ascender, tracker, and descender.
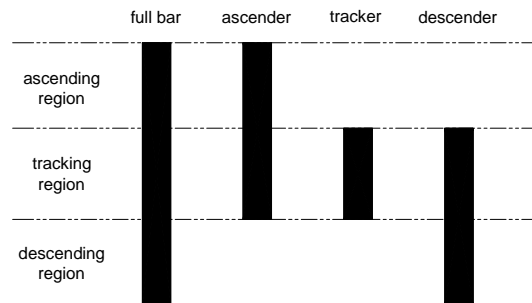

The following table compares the dimensions of 4CB to those of the POSTNET and PLANET Code.

	11-digit POSTNET	13-digit PLANET	4CB
Number of bars	62	72	65
Bar Width	0.020 ± 0.005 inch	0.020 ± 0.005 inch	0.020 ± 0.005 inch
Horizontal Pitch	22 ± 2 bars per inch	22 ± 2 bars per inch	22 ± 2 bars per inch
Height of Full Bar	0.125 ± 0.010 inch	0.125 ± 0.010 inch	0.182 ± 0.048 inch

What Services Does 4CB Support?

At the initial launching of 4CB anticipated later in 2006, mailers will be able to use 4CB on letter-size mail for the Confirm® Service and a version of Address Change Service (ACS) for First-Class mail. These services will be called OneCode[CONFIRM] and OneCode[ACS].

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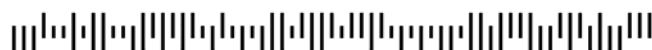
What are the Fields in 4CB?

4CB carries a payload 31 digits comprised of the following elements.

Type	Field	Digits
Tracking Code	Barcode Identifier	2 (2nd digit must be 0–4)
	Special Services	3
	Customer Identifier	6
	Sequence Number	9
Routing Code	Delivery Point ZIP Code	0, 5, 9, or 11
Total Data Payload		31 maximum

The following table shows the payload layout for 4CB for use with OneCode^{CONFIRM}. The migration of the fields from PLANET Code barcode is also provided.

4-State Customer Barcode		PLANET Code Destination Confirm		PLANET Code Origin Confirm	
Field Name	**Length**	**Field Name**	**Length**	**Field name**	**Length**
Barcode ID	2[1]				
Special Services	3	Service Type	2	Service Type	2
Customer Identifier	6	Subscriber ID	5	Customer ID	9 or 11
Sequence Number	9	Mailing ID	4 or 6		
Routing ZIP	0, 5, 9, 11				

The Barcode Identifier field is a 2-digit field that is reserved for future use to encode the presort identification that is currently printed in human readable form on the optional endorsement line (OEL) so as to provide additional functionalities. Initially, this field should be left as "00" by OneCode^{CONFIRM} and OneCode^{ACS} users. At a later date, the USPS may require the proper coding of this field.

The Special Services field is a 3-digit field that identifies the types of service. In the long run, the field is intended to allow a single 4CB to support multiple

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[1] The second digit of Barcode ID must be 0–4.

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services in addition to or instead of Confirm and ACS. At the initial launch, the following codes could be used:

Service Requested and Mail Class	Special Services Code in 4-State Customer Barcode
Destination Confirm (First-Class Mail)	040
Destination Confirm (Standard Mail)	042
Destination Confirm (Periodicals)	044
Origin Confirm	050
Address Service Requested	080
Address Service Requested with Destination Confirm (First-Class Mail)	140
Address Service Requested with Origin Confirm	150

The Customer Identifier field is a 6-digit number identifying the mailer or subscriber. At the initial launching of 4CB, Destination Confirm subscribers will append a leading zero to their assigned 5-digit Subscriber ID to form the new Customer Identifier field.

The Sequence Number is a 9-digit field. For Destination Confirm, this field will hold the existing Mailing ID field, which is a 4- or 6-digit field. Subscribers can expand the Mailing ID field to 9 digits if so desired. Otherwise, leading zeros should be used to fill the field completely. When using 4CB for Origin Confirm, subscribers may combine the Customer Identifier field and the Sequence Number field into a 15-digit field to hold the existing 9- or 11-digit Customer ID field plus additional digits. Subscribers can expand this field to 15 digits if so desired. Otherwise, leading zeros should be used to fill the field completely.

Currently, ACS users are assigned a 7-character participant code, which uniquely identifies the mailer for each particular mail class. Mailers who want to participate in OneCode[ACS] will be assigned a 6-digit Customer Identifier, which will be used to fill the Customer Identifier field. OneCode[ACS] users will use the Sequence Number field to encode the information previously stored in or associated with the keyline field.

The Routing ZIP Code field will accommodate 0, 5, 9 or 11 digit ZIP Code information. Confirm requires a 9- or 11-digit Routing ZIP to serves as "Subscriber ID" for Origin Confirm users. The routing ZIP Code inserted into the 4CB must be registered within subscriber's Confirm account.

ıₙ|ˑᵤˑ|ˑ||ˑᵤₙ||�||||ˑᵤ|ˑᵤₙ||ˑ•||||⁰||ˑₚₚₚₙ||ₐ||ᵐ||ₙ||ˑ|ₐₙˑⁱ||

Additional details pertaining to using 4CB for ACS and Confirm are available in addenda to Publication 8, *Address Change Service*, and Publication 197, *Confirm® Service User Guide*. These addenda can be downloaded from the Rapid Information Bulletin Board System (RIBBS) website at: http://ribbs.usps.gov/OneCodeSOLUTION/

How are 4CB Barcodes Printed?

Encoding data into a POSTNET or PLANET Code is very straightforward: each digit in the payload is represented by a predefined pattern of 5 bars. Encoding data into a 4CB is more complex. The encoding algorithm that translates the 31 digits in the payload into 65 bars is defined in the publication *USPS-B-3200*, which is available for download at same RIBBS web site.

To facilitate the adoption of 4CB, the USPS has developed, and is making available at no charge, a web-based, interactive encoder-decoder tool, and an extensive library of encoding software and fonts suitable for encoding and printing 4CB in mail production environments using selected operating systems and printing architecture. These resources are available at the same RIBBS web site.

To download the library of encoding software and fonts at the RIBBS website, you must first request a user ID and password by calling the NCSC Help Desk at 877-640-0724. You must log in using your assigned user ID and password before you can download from the library.

Once logged in, you will be able to download the encoding software package for any particular operating system of interest. Each package contains all the files needed to use the encoder software under that operating system in any of the languages or applications that are supported. The USPS currently provides software for a total of 20 combinations of operating system, language, and application environments:

||₁|₁·|₁|₁·₁|₁₁·₁||||₁|₁·₁₁·₁||₁|₁||₁|₁|₁₁·₁₁·₁₁||₁|||₁||₁₁|||₁||₁₁|||

	Language and Applications Supported					
Operating System	C	Java 2	COBOL	PL/1	MS Access	MS Excel
MVS, z/OS, and OS/390	Yes	Yes	Yes	Yes		
VSE/ESA	Yes		Yes	Yes		
OS/400	Yes	Yes	Yes			
AIX	Yes	Yes				
Linux for pSeries	Yes	Yes				
Linux for Intel[2]	Yes	Yes				
Software Development for Windows	Yes	Yes				
MS Office Application under Windows					Yes	Yes

For each operating system, the encoding software package is distributed as a standard ZIP file. Use any utility that can handle a PKZIP file to extract the individual files and store them in the path stored on the ZIP File. A user guide is included in each package to provide detailed operating system- and language-specific instructions on how to install and use the files in the package. All the required binary loadable software modules a number of source files for installation verifications are also included in the package.

Independent of operating system and language, the encoding software works as follows. Each call to the encoder requires two arguments: a 20-digit tracking code, and a 0-, 5-, 9-, and 11-digit routing code. The encoder will return the status of the encoding function along with a 65-character string of the letters F, A, D, or T, representing a full bar, ascender, descender, or tracker, respectively.

For example, a tracking code of 01234567094987654321 and a routing code of 01234567891 will be encoded into the following 65-character string:
AADTFFDFTDADTAADAATFDTDDAAADDTDTTDAFADADDDTFFFDDTTTADFAAADFTDAADA
When the string is printed with the appropriate font, the actual barcode will be produced: |₁·|||₁·|₁|·||₁·|₁|₁·||ᵐ₁|₁·||₁·||₁·|||₁·|||

From the same RIBBS website, registered and logged in users will be able to download the font package for any operating system of interest. Each package contains all the files needed to install and use the font for that operating system.

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[2] Including Intel-compatible systems

The USPS currently provides fonts for five major production printing environments:

- The Advanced Function Printing (AFP) environment defined by IBM;
- The XEROX Metacode, defined by XEROX
- Hewlett Packard's PCL (Print Control Language)
- Adobe's Postscript
- Window's TrueType

How reliable is 4CB?

The 4CB decoding software on various mail processing equipment has undergone rigorous testing both in controlled and live production environments. These tests included the use of stress deck to determine the decoder performance at and near the limits of the specifications. This stress deck incorporates a large number of known barcode defects relating to skew, shift, size, reflectance, etc., and has been used extensively to validate the printing specifications. Virtually all Delivery Bar Code Sorters (DBCS), Carrier Sequence Bar Code Sorters (CSBCS), and Automated Flats Sorting Machines (AFSM) have been upgraded and successfully tested.

Several mailers helped expand the test scenarios to include live mail testing at diverse mail processing locations. Participating mailers include the National Customer Service Center (NCSC) that applies 4CB on Move Validation Letters (MVL) to request Confirm Service. Scan records captured by the mail processing equipment were carefully analyzed to ensure that the equipment performed as expected.

Want More Information?

For general information, or to download specifications, addenda to publications for various services, and the library of encoding software and fonts, please visit the RIBBS web site at: http://ribbs.usps.gov/OneCodeSOLUTION/.

If you want to obtain user ID and password to download the library of encoding software and font, or if you need technical assistance in using the online tool or the library of encoding software and font, please contact the NCSC Help Desk at (877) 640-0724.

Help Desk for Confirm Service can reached at (800) 238-3150.

Help Desk for ACS can be reached at (800) 331-5746.